

# Metrical exceptionality and stress shift in Romanian nouns and adjectives

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## Abstract

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This paper proposes a reanalysis of stress in Romanian nouns and adjectives. We will argue that an analysis in Strict CV Metrics produces a simple account of the stress facts of Romanian without arbitrarily dividing the lexicon into regular and irregular words. The result is a system, which, although entirely lexically marked, always has accent falling within a determined metrical window; one that is not defined by syllables or feet, but CV syllabification. In this reanalysis, all forms share precisely the same conditions on stress. Moreover, the fact that the window is defined in CVs rather than syllables uniquely makes the correct prediction that nouns/adjectives of the shape  $C\acute{V}.CV.CVC$  are impossible. Previous accounts that split the lexicon into “regular” and “irregular” forms have no obvious way to exclude this particular shape, despite it being truly unattested in the language, unlike the stated “exceptional” patterns, all of which are attested. We further use the Strict CV metrical window to correctly predict

a pattern of stress shift observed with the adjectival suffix *-ik*. The implications for diphthong structures in Romanian are also discussed.

**Keywords:** Stress, Romanian, Metrical window, Strict CV, Stress shift, Diphthongs.

## 1. Introduction and background

Traditional accounts of the phenomenon assume that the Romanian stress system is completely unpredictable, citing minimal pairs such as *átfele* ‘the needles’ vs. *atfele* ‘those.FEM’ (Daniliuc & Daniliuc 2000). It is perhaps for this reason that Romanian accentuation seems to be understudied compared with other Romance languages such as Italian and Spanish.

The few existing formal proposals are surprisingly heterogenic in details, frameworks, and execution. However, the proposals discussed in this section (Chitoran 2002a, Franzén & Horne 1997, Friesner 2006, Iscrulescu 2005 and Steriade 1984) agree in their interpretation of the empirical phenomenon. All proposals construct the following empirical characterization of stress, where the following “regularities” are identified:

One sub-pattern is taken to be primary, the rule is stated as “stress the final syllable if it ends in a consonant, otherwise stress the penultimate”, see table 1a. Further, a secondary pattern is identified in a group of “marked” nouns and adjectives (table 1b), where words ending in word-final consonants are also stressed on the penultimate syllable. In “marked” vowel-final trisyllabic words, stress falls on the antepenultimate syllable. The proposals then acknowledge a number of exceptions that cannot be captured by either pattern: nouns ending in a stressed vowel *pané* ‘breaded’, *makará* ‘crane’, including a number of Latin origin nouns such as *steá* ‘star’, *maşéa* ‘molar’ and a group of nouns that exhibit what appears to be surface preantepenultimate stress ending in the affix *-itsə* (e.g. *bívolitsə* ‘female buffalo’, *véveritsə* ‘squirrel’, *lébenitsə* / *lúbenitsə* ‘watermelon’). Finally, all proposals make reference to a syllabically-defined metrical window that dictates that stress must fall within the final three syllables (although once again, the nouns ending in *-itsə* are taken as an exception to this rule).

**Table 1.** Stress patterns (summary of previous literature)

a. Primary stress pattern			
	V-final		C-final
Disyllabic	<i>máre</i> ‘sea’		<i>bərbát</i> ‘man’
	<i>núme</i> ‘name’		<i>mesáj</i> ‘message’
Trisyllabic	<i>feméje</i> ‘woman’		<i>animál</i> ‘animal’
	<i>maşínə</i> ‘car’		<i>magazín</i> ‘shop’
b. Primary stress pattern			
	V-final		C-final
Disyllabic	not applicable		<i>záhər</i> ‘sugar’
			<i>súnet</i> ‘sound’
Trisyllabic	<i>drágoste</i> ‘love’		<i>kəlúgər</i> ‘monk’
	<i>líterə</i> ‘letter’		<i>artíkol</i> ‘article’

Within this delimiting of the empirical phenomenon, Steriade (1984) proposes a weight-sensitive system that employs segment extrametricality in the “marked” group in order to derive the correct stress placement.

Franzén & Horne (1997) also use extrametricality, in their analysis it is syllable extrametricality. This is introduced to account for a group of initial-stress nouns of Latin origin such as *indzer* ‘angel’ as well as certain Slavonic loans (p. 76-77). While both Steriade’s and Franzén & Horne’s versions of extrametricality correctly predict stress in disyllabic nouns, it should be noted that their predictions vary for trisyllabic forms of the shape CV(C).C<sup>́</sup>.CVC. While segment extrametricality can correctly predict forms such as *kəlúgər* ‘monk’, Franzén & Horne’s syllable extrametricality falsely predicts the illicit form \**kəlugər*.<sup>1</sup>

Further, there are two analyses within Optimality Theory. Chitoran (2002a) and Iscrulescu (2005) assume that all Romanian nouns and adjectives end in a vowel in the underlying representation. However, in Chitoran’s analysis, by stipulation, this obligatory final vowel never falls within the stress domain. Consequently, Chitoran can simply state that the rightmost syllable of the phonological word must be stressed thereby obtaining the “unmarked” pattern. Meanwhile, a reranking of her proposed constraints could yield the correct pattern for the “marked” group, however, Chitoran does not consider this worth the cost of assuming two lexically specific co-phonologies, therefore, she establishes a “marked” pattern that is lexically exceptional.

Iscurlescu (2005) goes in another direction by assuming one single “head syllabic trochee” that is fixed at the right edge of the word in the unmarked class. In unmarked surface C-final words, however, that are (by hypothesis) underlyingly CVCu, only a degenerate foot is available. When the underlying final vowel is deleted, the result is surface final stress: *e.g.* *kovríg* ‘pretzel’ (UR: *kovrigu*; “degenerate head syllabic trochee” → *kovrígu* → vowel deletion → *kovríg*). The words in the “marked” group must be lexically pre-specified in terms of stress.

Finally, Friesner (2006) proposes a rule-based analysis based on cyclicity, whereby affixes may either be cyclic or non-cyclic. In contrast to Franzén & Horne, who assume a similar split between inflectional affixes (non-cyclic) and derivational affixes (cyclic), Friesner does not assume any clear-cut divide. Here cyclicity is being used to replicate the distinction between the regular and the “marked” set, but cyclicity must be arbitrarily (that is to say “lexically”) marked on each head.

Thus, in each analysis, the words and affixes that belong to each category will result in either the basic stress pattern or the “marked” pattern and that is ultimately a matter of lexical specification. As we have highlighted, in all these proposals extensive lexical specification is indispensable.

In contrast to the previous approaches, we will embrace the lexical marking of stress, and even extend it, so no single pattern is arbitrarily taken to be “primary”. Though this leads to a loss of generalization, it does add to the transparency of the system and it is not the case that the lexically marked system is unconstrained.

Section 2 begins by problematizing the notion of default and exceptional stress in Romanian, it presents the empirical picture of stress in the language. Section 3 is an introduction to Strict CV Metrics. It begins by discussing the standard metrical window before presenting an introduction to the Strict CV system of representation. It then demonstrates what a metrical window looks like according to Strict CV

<sup>1</sup> Incidentally, this form is excluded by our analysis as we will show in section 5.1.

representations. Section 4 then presents our counteranalysis of Romanian stress, it explains its parameter settings and its resultant representations. Section 5 then presents the predictions that fall out of the Strict CV analysis, the CVCVCVC# gap and the stress shift with the –ik affix. Section 6 describes the behaviours of diphthongs with regard to stress and dissects the problem of quantity-sensitivity.

## 2. Defaults and exceptions

### 2.1. Regular vs. irregular vs. unattested

One detail that is encoded within the very nomenclature of the phenomenon is the assumption that there is a basic, i.e. default pattern. Regularity is defined largely by frequency. Chitoran (2002a: 76) cites frequency data from the DEX (1975): “the forms in the boxed pattern [unmarked pattern] are more numerous by about one third than the unboxed forms [marked pattern].” We do not take frequency to be phonologically significant, however, it should nevertheless be noted that there are some high frequency words of each type. Furthermore, there is the salient issue that the “marked” pattern is essentially contradictory to the “basic” pattern. Additionally, the “true exceptions” (e.g. pané ‘breaded’, vowel-final words with final stress), cannot even be captured by the “marked” pattern, resulting in an empirical landscape that suddenly evades all identifiable regularities. Therefore, in practice during language acquisition, children are confronted with highly conflicting patterns. Naturally, it could be argued that these exceptions are not large in number, however, they are found in every-day, high frequency words which would be part of the primary linguistic environment of L1 learners see table 2 a-iii. Thus, as illustrated the table below, for every primary máre ‘sea’ there is an exceptional and contradicting pané ‘breaded’, for every regular balón ‘balloon’ there is a “marked” and opposite súnét ‘sound’ and so on.

**Table 2.** Regular Stress and Exceptions for Chitoran (2002a: 75-77)

a. CV final forms

i. Regular	ii. Exception (“marked”) <sup>2</sup>
CV.CV.CV	
sáre ‘salt’	pépepe ‘watermelon’
avére ‘wealth’	pásære ‘bird’
kəmərá ‘pantry’	kámerə ‘room’
CVC.CV.CV	
kaldáre ‘bucket’	léspede ‘stone’
CVC.CV#	
albástru ‘blue’	línište ‘silence’
kəpóstru ‘bridle’	drágoste ‘love’
	iii. Other Exceptions
	pará ‘spare change’

<sup>2</sup> Forms such as drágoste ‘love’ are acknowledged to be mispredicted by Iscrulescu (2005).

			pané	‘breaded’	
			makará	‘crane (constr.)’	
			kureǎ	‘belt’	
			steá	‘star’	
b.	CVC(C) final forms				
	i.	Regular	ii.	Exception	
		CV.CVC			
		balón	‘balloon’	bívol	‘bison’
		balkón	‘balcony’	gálben	‘yellow’
		CV.CVCC			
		mərúnt	‘small’		
		ardzînt	‘silver’	kóbalt	‘cobalt’
		CV.CV.CVC			
		asasín	‘assassin’	kəlúgər	‘monk’
		džamantán	‘suitcase’	artístik	‘artistic’

**Source:** Chitoran (2002a: 75-77)

In conclusion, splitting the lexicon into a regular and exceptional pattern has the effect that large chunks of the lexicon (including many frequent words) are treated as somehow “outside” of the general metrical system of the language. This is especially unattractive, since as we have seen, this assumed divide is simply not supported by the data. One final indirect consequence of the split is that it obscures an interesting generalization: While the “marked” group includes trisyllabic nouns such as pépene ‘watermelon’, drágoste ‘love’ etc. (see table 2a-ii) the consonant-final antepenultimate stress counterpart is neither exceptional nor “marked”, but entirely unattested. Such a restriction is not possible in the above formulation of the rules (see section 1) and the three-syllable window restriction also cannot explain the absence of the stress and word-shape combination CV.CV.CVC. This empirical gap will be the focus of the following sections.

## 2.2. Morphologically determined patterns

As mentioned in section 1, the apparent minimal pair átfele ‘the needles’ vs. atfele ‘those.FEM’ have been taken as evidence, that Romanian stress is entirely unpredictable. Fortunately, the decomposition of these two words reveals that one is a simple pronoun, while the other is a complex form. Indeed, Franzén & Horne’s (1997: 75) central argument was to prove that affixation is relevant for predicting Romanian stress patterns. It follows then that any analysis of stress should address affixation.

Empirically, it is clear that affixes differ in their stress behaviours. Certain affixes are inherently stressed (1), while others are clearly outside of the stress domain (2). Franzén & Horne (1997) as well as Chitoran (2002a) distinguish between the stress behaviour of derivational (inherently stressed) and inflectional morphology (not stress-relevant). In contrast, Friesner (2006) argues that the distinction between cyclic (stress-relevant) and non-cyclic affixes does not conform to any such clear-cut divide.

## (1) Inherently stressed suffixes (non-exhaustive; see Franzén &amp; Horne 1997: 80-81)

## a. Diminutives

M	F		DIM	
-áf	/ -áfə	jépur(e) <sup>3</sup>	jepuráf	‘rabbit’
-fór	/ -foárə	púj	pujför	‘chicken’
-íór	/ -ioárə	pantóf	pantofiór	‘shoe’

## b. Further derivational affixes

-ár	þǫárt(ə)	‘gate’	portár	‘porter’
-íme	már(e)	‘large’	məríme	‘size’
-táte	síngur	‘alone’	singurətáte	‘loneliness’
-íe	obráznik	‘rude’	obrəznitǿ	‘rudeness’

## (2) Affixes invisible to stress

## a. Definite markers (-l)

zgómot	zgómotul	‘(the) noise’
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## b. Plural marking (-a, -le, -j...)

paʒíʃte	paʒíʃtele	‘meadows(s)’
---------	-----------	--------------

## c. Case marking (-ej, -lor, -o/-e, etc.)

kásə	kásəj	‘house.GEN’
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## d. The diminutive/feminine suffix -itsə

bívol	bívolitsə	‘female buffalo’
dóktor	dóktoritsə	‘female doctor’
--	véveritsə	‘squirrel’
--	lébenitsə / lúbenitsə	‘watermelon’

We take the affixes in (1) to be instances of underlying stress on the affix, which, being rightmost takes priority (since in Romanian and other Romance languages there can only be one stress per word). The latter (see [2]) instead is taken to be due to cyclicity in a manner akin to Friesner (2006). For work on this in Strict CV (Newell & Scheer 2007; Scheer 2008; Newell 2009; Scheer 2011, 2012; Newell 2021a).

<sup>3</sup> Roots must be followed by the desinence vowel (can be null), which marks gender category (for details see Chitoran 2002a:32-33). When the desinence vowel is overt, it is put in brackets.

### 3. Strict CV Metrics

#### 3.1. *The standard metrical window*

The key behind the reanalysis is the metrical window, standardly posited in Romance. All proposals discussed in the literature review above mention the existence of a three-syllable window. However, neither analysis elaborates on the metrical window or offers any details on the phenomenon. Crucially, the window is (or must be assumed to be) defined as three standard syllables from the right edge. However, a window defined with syllables does not capture the same predictions as the Strict CV window that we will propose and which we think better covers the data.

The standard (metrical) window has somewhat fallen out of favour in recent times since it immediately begs the question of how to derive it. However, the metrical window does have an analytical purpose and a long history in Metrical phonology (for a review and criticism see Kager 2012). One approach has been to replace the window with a ternary foot (Martínez-Paricio & Kager 2015, 2016; Martínez-Paricio & Torres-Tamarit 2018). Since it is ternary, the foot is layered and taken to be (weakly) recursive: F(S (S S)). This structure, however, is itself highly contested, so therefore it is not an obvious replacement for a three-syllable window.

In fact, it is not even clear that the window has been analytically superseded, recent analyses, for example that of Arabic (Faust & Ulfsbjorninn 2018), have pointed to the simplification that a window provides in opposition to the foot-based analyses with their associated forms of extrametricality.

Moreover, as Ulfsbjorninn (under review) proposes, the window cannot be replaced by foot structure in Standard Italian because, in any standard analysis, a window will be necessary *in addition* to a ternary ‘foot’ (cf. Krämer 2019). This is because the foot of Standard Italian has to be moraic: (dá<sub>μ</sub>t<sub>μ</sub>te<sub>μ</sub>)<ro<sub>μ</sub>> ‘date (fruit)’ but in a standard analysis, the window appears to be defined syllabically: \*(ká<sub>μ</sub>.ta<sub>μ</sub>.na<sub>μ</sub>)<la<sub>μ</sub>>. This condition is only violated by clitics, generally assumed to belong to a different domain: mét:er<melo> ‘put it on myself’ & met:éndo<melo> ‘putting it on myself’. For more on Standard Italian Stress see Bertinetto (1981), Bafile (1996, 1999), D’Imperio & Rosenthal (1999).

By contrast, the window is a key mechanism of Strict CV Metrics (Scheer & Szigetvari 2005; Ulfsbjorninn 2014; Faust & Ulfsbjorninn 2018). In the following section, we will demonstrate that redefining the metrical window in terms of CV units, leads not only to the most inclusive account of stress in nouns and adjectives, but also correctly predicts an actually unattested word-shape, as well as explaining certain patterns of stress shift in the derivation of adjectives.

Before we show the analysis, we will introduce the basic tenets of Strict CV and how Metrics works in this framework.

#### 3.2. *The Strict CV framework and its metrical window*

Strict CV Metrics is a grid theory, the grid is projected from a strictly alternating CV skeleton (Lowenstamm 1996; Scheer 2004). The Strict CV framework is not unlike the CV phonology of Clements and Keyser (1983), except that its representations are strictly alternating between C and V. In this representational model, consonant clusters, vowel hiatuses, word-initial vowels and word-final consonants will all be analysed as containing empty grid-slots.

- (3) Strictly alternating CV skeleton (example words are hypothetical)  
 a. V-initial, consonant cluster, C-final (empty V-slots are shown underlined)

i. ankor

<u>C</u>	V	C	<u>V</u>	C	V	C	<u>V</u>
	a	n		k	o	r	

- b. Long vowel and geminate consonant

i. lan:o

C	V	C	<u>V</u>	C	V
l	a	n	_____	o	

ii. toni:l

C	V	C	V	C	V	C	<u>V</u>
t	o	n	_____	i	l		

As is standard in Strict CV (and Government Phonology before it), Empty V-slots (MEN and FEN) are parametrically able to remain phonetically uninterpreted. MEN such as (V2) are contextually licensed by a filled V-slot to their right (V3). The mechanism is called Government, but since it is not implicated in any aspect of this paper we will simply refer the interested reader to (Scheer 2004 and references within it, especially [Charette 1991]). The FEN, however, is licensed by a parameter by virtue of its finality. This is called the Domain Final Parameter (cf. Kaye 1990, Scheer 2004). Coming now to Metrics, in this framework, only V-slots (i.e. nuclei) are metrically projected. However, as portrayed in (3) we must distinguish between empty and filled V-slots. The former are not associated to any features, the latter are. Filled V-slots (those containing features) are always projected, while empty V-slots may or may not be projected depending on the parameter settings (Scheer & Szigetvari 2005). If an empty V-slot is projected, it can give the appearance of a metrically significant (moraic) “coda”-consonant as shown (4). In the representations below, grid marks are shown with asterisks (\*).

- (4) Empty V-slots can be projected giving the appearance of consonant weight

a. balón ‘balloon’

	*		*		*
C	V	C	V	C	<u>V</u>
b	a	l	o	n	



## b. avére ‘wealth’

			*		
	*		*		*
C	V	C	V	C	V
	a	v	e	r	e

Further, as observed in Faust & Ulfsbjorninn (2018), a final empty V-slot (a.k.a. FEN [Final Empty Nucleus]) can be independently set from the medial empty V-slots (a.k.a. MEN [Medial Empty Nucleus]). Typologically, this means that the final empty V-slot can project and be metrically visible, without any of the word-medial Vs being metrically visible (cf. Yoshida 1995; Harris & Gussmann 2002; Charette 2006). Though this is characteristic of GP approaches, it is sometimes held outside of GP, see for instance catalexys in Kiparsky (1991) and Burzio (2003).

We now turn back to the concept of the metrical window, which can now be precisely defined in Strict CV terms. In this framework, the window is composed of a span of metrically projected Vs (2, 3, 4...) from the right or the left edge. A span of three projected V-slots from the right edge will be called 3\* window. If the language projects FEN, these will be part of the count for the metrical domain. Therefore, as can be seen in (5) C-final and V-final words will have different sized metrical domains.

## (5) 3\* Metrical window (shown grey shaded), with and without presence of FEN

## a. FEN project

## i. V-final word

			*	*	*	*	
C	V	C	V	C	V	C	V
b	a	n	a	d	a	k	a

## ii. C-final word

			*	*	*	*	
C	V	C	V	C	V	C	<u>V</u>
b	a	n	a	d	a	k	

## b. FEN do not project

## i. V-final word

			*	*	*	*	
C	V	C	V	C	V	C	V
b	a	n	a	d	a	k	a

## ii. C-final word

	*						*		
C	V	C	V	C	V	C	V		
b	a	n	a	d	a	k			

Given a 3\* window, and if MEN do not project<sup>4</sup>, we see in (6) that, from a surface perspective, only word-final “codas” will appear to be metrically significant. Word-medial “codas” will have no metrical significance.

## (6) 3\* Metrical window, FEN project, MEN do not project

## a. V-final word

	*						*		
C	V	C	V	C	V	C	V		
b	a	n		d	a	k	a		

## b. C-final word (impression of C-final weight)

	*						*		
C	V	C	V	C	V	C	V		
b	a	n		d	a	k			

## c. Word-medial clusters are metrically insignificant

	*						*		
C	V	C	V	C	V	C	V	C	V
b	a	n		d	a	k		t	a

Conversely, to illustrate the typological possibilities, we also show (7) below, a system in which both FEN and MEN project. If this occurs with a 3\* window, it will generate the following metrical pattern where both final and medial “codas” will appear to be metrically significant.

<sup>4</sup> A reviewer correctly points to the fact that empty does not equal silenced (either by GOV or DFP). This is correct, in Strict CV Metrics, the way it’s been set up in Ulfsgjorninn (2014) and Faust & Ulfsgjorninn (2018), the lateral relations are (already) established before projection. So any empty nuclei that are not silenced are treated exactly like filled nuclei. In Ulfsgjorninn (2014) there is discussion of languages that treat all empty nuclei (schwa or not) as not metrically projected – but more work needs to be done in this area. For the paper at hand, the situation is the more well-known one, it is characterised where FEN project, and MEN (meaning empty and silenced V-slots) do not project

## (7) 3\* window both FEN and MEN project

## a. V-final word

	*			*	*		*	
C	V	C	V	C	V	C	V	
b	a	n	a	d	a	k	a	

## b. C-final word

	*		*	*		*	
C	V	C	<u>V</u>	C	V	C	V
b	a	n		d	a	k	

## c. Word with various ‘codas’

	*		*		*	*	*		
C	V	C	<u>V</u>	C	V	C	<u>V</u>	C	V
b	a	n		d	a	k		t	a

Another possibility (found in Cairene Arabic, see Faust & Ulfsbjorninn 2018) is that FEN would not project but MEN do. If this occurs in a 3\* window it will generate the following metrical domains: Word-final Cs will appear to be extrametrical, and word-medial “codas” will appear to be heavy.

We see above that the only metrically significant object is the V-slot, which exists in various representational states. A V-slot can be Filled or Empty, Final or Medial. These states are variably projected depending on the parameters of the language. In association with a 3\* window, it will lead to different metrical domains depending on the word-shape. The parameter settings for Romanian are shown beneath.

#### 4. Romanian stress parameters and representations

The parameters here apply to Romanian. They hold for every word of Romanian, not just a “regular” sub-pattern. In this model, the Romanian stress pattern is stated as lexically contrastive stress marking within the invariant metrical domain, the 3\* window.

- (8) Window: {yes / no}  
 Range: 3\* from the right edge

(9) V-Projection settings for Romanian (underlined)<sup>5</sup>Final Empty Nuclei project: {yes / no}Medial Empty Nuclei project: {yes / no}

Given these parameters, the following word shapes are made possible, all of which are attested. The only possibility that is excluded is that underlying stress is never assigned to empty V-slots.

## (10) Stress distribution within the window

## a. Surface Final stress

i. V-final makará ‘crane (mechanical)’

	*				
	*		*		*
C	V	C	V	C	V
m	a	k	a	r	a

ii. C-final balón ‘balloon’

	*				
	*		*		*
C	V	C	V	C	<u>V</u>
b	a	l	o	n	

iii. CC-final mărúnt ‘tiny’

	*						
	*		*			*	
C	V	C	V	C	<u>V</u>	C	<u>V</u>
m	ə	r	u	n		t	

<sup>5</sup> Standard GP had a very natural way of expressing this, since FEN was an empty nucleus Kaye (1990), which could be used to derive final extrametricality Charette (1984); Harris & Gussmann (2002). In that model, however, MEN are analysed as branching rhymes. This therefore deprives us from analyzing Metrics with a single unified object: the empty V-slot, which is the departure point for Scheer & Szigetvari (2005).

## b. Penultimate Stress

i. V-final avére ‘wealth’

\*

\* \* \*

C	V	C	V	C	V
	a	v	e	r	e

## c. Antepenultimate stress

i. V-final pépene ‘watermelon’

\*

\* \* \*

C	V	C	V	C	V
	p	e	p	e	n e

ii. C-final bívol ‘bison’

\*

\* \* \*

C	V	C	V	C	<u>V</u>
	b	i	v	o	l

## 5. Predictions of the Strict CV analysis

5.1. The *CVCVCVC* gap

We have seen stress falling on the antepenult: kámerə ‘room’. The presence of a rightwards heavy syllable is immaterial to this pattern: drágoste ‘love’. We have also already seen exceptional main stress when the final syllable contained a final consonant: kəlúgər ‘monk’ and kóbalt ‘cobalt’.

The shape *CVCVCVC* would have both these exceptional properties and nothing in any of the previous analyses would exclude it as a lexically marked exception. However, it is actually unattested.<sup>6</sup>

<sup>6</sup> One reviewer rightfully points out some forms which we would have to treat as exceptions, since they violate our proposed 3\* window. These include the proper name Solomon [sólon], and the two Greek names Endymion [endímijon] and Hyperion [hipérijon]. For those speakers who know these forms, they probably have to be listed exceptions. However, we note these are the only counterexamples to our metrical conditions, whereas the standard account’s list of exceptions is many orders of magnitude larger. We further note that there is speaker variation in the form Solomon, with some speakers pronouncing it: [solomón]. We also note that all the exceptional forms end in /-on/ and have

Strict CV Metrics, however, does rule out this pattern. Since the window is built on a CV skeleton and not standard syllables (contra Chitoran 2002a; Friesner 2006), our analysis in section 2 predicts that such forms would have stress outside of the window.

The unit that the window is built on is crucial because in the unattested form \*C<sup>́</sup>V.CV.CVC stress is located only three standard syllables from the right edge, just as it is in some well-formed Romanian words: *líniſte* ‘silence’. Whereas, in our model, as we show in (11), in such a form, stress would fall on the fourth gridmark from the right edge, that is to say: outside the metrical window. This explains the ungrammaticality of this stress pattern in Romanian.<sup>7</sup>

(11) \*C<sup>́</sup>V.CV.CVC gap

\*bánalak

	*!						
	*		*	*	*		
C	V	C	V	C	V	C	<u>V</u>
b	a	n	a	l	a	k	

### 5.2. Stress Shift in Derived Forms

In order to test the 3\* window, we shall proceed with the derivational suffix *-ik*. This is one of the few derivational morphemes that is stress-relevant but does not shift stress onto itself (Chitoran 2002a: 46). The suffix attaches to nominal roots, creating an adjective with the interpretation ‘like N’.

As the examples in (12) show, despite undergoing suffixation, the position of word stress is preserved. Crucially, however, unlike the affixes in (1), this suffix is metrically visible and is implicated in stress shift in some forms. So, by hypothesis, if we are correct, these forms must also be subject to the metrical window.

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other peculiarities that might be causing their exceptionality. For a parallel, when it comes to /-on/ final forms, many speakers of English attribute them (lexical, contrastive) secondary stress. This secondary stress protects the –on from unstressed vowel reduction: [mæk.rən] ‘macron’, [sæf.rən] ‘saffron’, [tæksən] ‘taxon’ vs. [æjprən] ‘apron’, [dʒæksən] ‘jackson’ (saffron is variable: [sæf.rən] ‘saffron’). It seems that in Romanian too –on final forms have more prominence, perhaps even secondary stress, that an unstressed final vowel would not ordinarily have: [endímijøn] vs. [kopák-u-l] ‘the tree’. Perhaps these forms are exceptional for this reason, however, whatever the facts, we repeat that there are very few of them.

<sup>7</sup> This pattern could coincidentally be obtained across domains, for example in compounds (X)(Y) or a stem followed by a stress-invisible suffix, one which never affects the stress of the stem: ((X) Y) (cf. –ing: párent / párenting in English). However, the prediction holds for any monomorphemic items and any affix which is metrically visible to the stem (cf. –al paréntal in English). We do not go into how this cyclicity is obtained, but the interested reader can be pointed to Scheer (2011).

## (12) Stem + ik (Adj)

vést	→	véstik	‘western’
omér	→	omérik	‘homeric’
paramétr(u)	→	paramétrik	‘parametric’

Indeed, beyond to the forms in (12) there are N + -ik forms that do display the kind of stress shift that our account predicts. Importantly, these examples are not the same as in other derivational suffixes, where stress is shifted from the root to the affix which are easily analysable as being due to underlying stress on the affix. Instead in these forms, stress moves rightward to stay within the 3\* window.

(13) fósfor	→	fosfórik	‘phosphorous’
metáfor(ə)	→	metafórik	‘metaphorical’

Here the stress shift is not coming from the underlying stress of -ik. Neither does it follow from either the basic or “marked” stress rule. This kind of stress shift is exactly what is predicted if the accent were merely shifting to remain within the window. The derivation of this stress shift is shown in (14) beneath.

## (14) Stress shift due to the window

## a. fósfor ‘phosphorous’

		*							
		*				*			*
C	V	C	<u>V</u>	C	V	C	<u>V</u>		
f	o	s		f	o	r			

## b. \*fósforik

						*			
C	V	C	<u>V</u>	C	V	C	V	C	<u>V</u>
f	o	s		f	o	r	i	k	

## c. Stress shift: fosfórik

						*			
C	V	C	<u>V</u>	C	V	C	V	C	<u>V</u>
f	o	s		f	o	r	i	k	

The stress shift is, in fact, caused by the metrical window. It occurs where metrically visible suffixation would lead to a violation of the 3\* window such as the ungrammatical CV.CV.CVC form.

An alternative interpretation would be to assume that the stress shift with –ik is due to “pre-stressing” since it is the case that all surface –ik forms have stress just before the affix. However, it is not clear how one would model pre-stressing. So, the onus would be on this analysis to explain how pre-stressing works. Especially because, the prestressing appearance of the affix is actually derived from various facts of the language and the window. As we have seen, if the root has final stress, then the addition of –ik produces no change and the surface stress will fall immediately before –ik. This is also where the stress is underlyingly so no pre-stressing is needed. If the stress falls on a vowel-final root with penultimate stress, the vowel /ik/ will overwrite the final vowel of the root, again this leads to stress falling immediately before –ik, but (as shown beneath) stress again falls where it lies anyway underlyingly, obviating the need for prestressing.

(15) paramétru +<i>k → paramétrik ‘parametric’<sup>8</sup>

a. UR

	*									
	* _____ *									
...C	V	C	V	C	V	+		C	V	
m	e	t		r	u			i	k	

b. Computed form (stray erased “deleted” items are shown underlined)

	*									
	* _____ *									
...C	V	C	V	C	V	+		C	V	
m	e	t		r	<u>ɰ</u>			i	k	

In this framework any consonant-final roots with penultimate stress will lead to the forbidden CV.CV.CVC pattern, with stress outside the window. The complete derivation is shown beneath.

(16) fósfor + <-i>k → fosfórik ‘phosphorous’

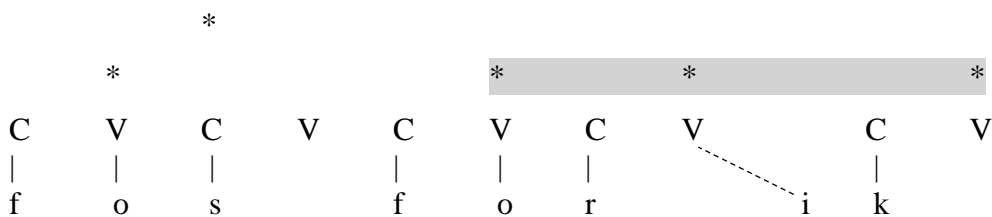
a. URs

	*									
	* _____ *									
C	V	C	V	C	V	C	V	+	C	V
f	o	s		f	o	r			i	k

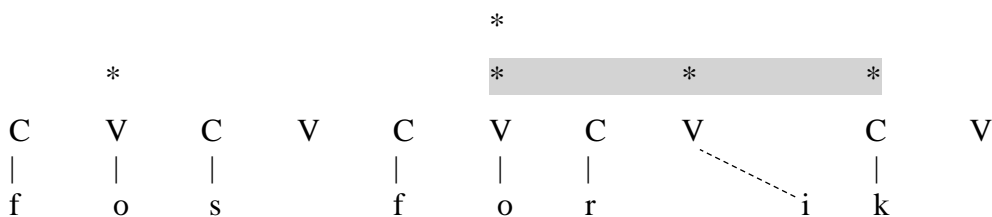
<sup>8</sup> The affix is assumed to have a floating initial vowel <-i>k, affixes of this shape are also argued for in Newell (2021b).



## b. Ungrammatical underlying stress outside of window



## c. Computed form with stress shift



In these forms also, we end up with stress appearing immediately before –ik, however, this is the only case where stress does not fall where it would be anyway underlyingly, and here it is handily explained with the metrical window that also mitigates against any other CV.CV.CVC forms.

## 6. Quantity-sensitivity in Romanian

We have seen so far proposed that Romanian stress cannot be characterized as quantity-sensitive. However, as a reviewer notes, there are some aspects of the stress system that certainly look like they have a quantity-sensitive flavour.

As an analytical choice, without incurring massive lists of exceptions mentioned in section 2, it is *possible* to propose that stress is sensitive to the quantity of diphthongs (and only diphthongs). However, the data does not oblige this interpretation, and on the balance of the evidence, we still opt for a fully quantity-insensitive stress system.

Regardless, importantly for our proposal, none of the diphthong behaviour contradicts or challenges the 3\* window analysis of stress that we have laid out in previous sections, so at most, diphthong weight would be an addition to the model rather than a challenge to it. We also think it is possible that contemporary Romanian is shifting toward an unambiguous pattern of quantity-sensitivity, where the final syllable of words would be heavy if it contains a “diphthong” or a “complex coda”: CVV and CVCC. This would not be typologically unexpected. However, currently, there are (a few) well-known counterexamples that exhibit the opposite behaviour (see table 2).

In this final section, we will assess the categorical evidence for quantity-sensitivity in Contemporary Romanian, discussing in particular the possible ways to analyse the behaviour of diphthongs.

### 6.1. Evidence from the minimal word

Some reasons to reject the thesis of quantity-sensitivity in Romanian comes from some typological and empirical perspectives given in Isculescu (2005). Firstly, there is no vowel length opposition, all vocalic segments are medium long. Secondly, there is no

minimal word requirement, major class items can happily be CV in Romanian: zi ‘day’, ja ‘saddle’, fi ‘to be’, sta ‘to stand’. Finally, there is the observation that is already made in section 2 there is no consistent correlation between syllable shape and stress-placement, except for that of diphthongs.

### 6.2. Diphthongs and stress

The distribution of diphthongs is strongly correlated with stress in Romanian. There are two classes of these.

**Table 3.** Diphthongs and stress

	RISING		FALLING	
(a) Stress optional	jV	jobág ‘bondsman’	<b>Word internally:</b> Vj	nájlon ‘nylon’
	jV̆	júte ‘spicy’	Vj	tajfún ‘typhoon’
The (b) Stress obligatory	[ɔá]	floáre ‘flower’	<b>Domain finally:</b> Vj	gunój ‘garbage’
	[ɛá]	kreáŋgə ‘branch’		

diphthongs [ɛa] and [ɔa]<sup>9</sup> are only found in stressed position, whereas the Vj sequences can occur in unstressed word-medial, but it must always be stressed in domain-final position.

This correlation is consistent with an analysis of heavy diphthongs in a quantity-sensitive language, but it can also be equally well explained, or perhaps even better explained without that assumption.

#### 6.2.1. Stress and [ɛa] and [ɔa]

Firstly, the fact that [ɛa] and [ɔa] are always stressed originates in their diachronic origin, where these are the contemporary reflexes of Latin’s stressed /e/ and /o/ when they preceded vowels containing (in an Element Theory interpretation |A|<sup>10</sup>): é > eá / \_ C<sub>0</sub>{ə,a,o}, ó > oá / \_ C<sub>0</sub>{ə,e,a,o} Chitoran (2002a: 201), see also Vasiliu (1968: 65-68). Therefore, their relationship with stress need not be one of “stress-to-weight” (Prince 1990). Instead, synchronically, this could merely be a correlation of a phonological structure (diphthong) and lexically-marked stress. Indeed, though these diphthongs clearly have a special structure (that we will expand on later in this section), they do not appear to be synchronically heavy (bimoraic).

A strong argument against their heavy/bimoraic/VV status comes from syllable structure. These diphthongs can equally be found in open and closed syllables: noápte ‘night’ (Chitoran 2002a: 21-23). If they had a bimoraic nucleus, and the coda consonant also projected an additional mora, one would be forced to assume a trimoraic syllable. Based on this and other aspects of their behaviour, Chitoran assigns

<sup>9</sup> The diphthong [ɔa] has been experimentally demonstrated to be phonetically indistinguishable from [wa] (Chitoran 2002b), for simplicity we have assumed and notated [ɔa] throughout.

<sup>10</sup> Element Theory is a non-articulatory feature system, an introduction to the model is found in Backley (2011). In Element Theory vowels are composites of the primitives: I, U, A. e = A.I, o = A.U. [ə] can be unheaded A. [i] could be unheaded I.

[e̞a] and [o̞a] the structure shown in (17a), which we merely translate into Strict CV as (17b). Just as these diphthongs are two vowels attached to one mora in Chitoran, for us they are two root nodes attached to a single V-slot.<sup>11</sup> In Strict CV, therefore, /e̞a/ and /o̞a/ “diphthongs” are actually bifurcated V-slots.<sup>12</sup>

- (17) a. Moraic Structure (Chitoran 2002a: 21)      b. Strict CV translation



The structures above bring us to the actual interaction of structure and stress in Romanian, which is one of licensing by stress rather than stress-to-weight (or even stress-to-diphthong).

All words containing the diphthongs [e̞a] and [o̞a], regardless of gender category<sup>13</sup> undergo a systematic reduction from diphthong to corresponding mid-vowel if stress is shifted away from the diphthong. This can be observed in affixed forms. This occurs frequently because, as mentioned in section 2.2, many derivational suffixes are underlyingly stressed, and clashes are resolved to the right.

- (18) Reduction under stress

a.	fl̥ár(e)	+	-it̥f̥íkə	florit̥f̥íkə	‘little flower’
	po̥árt(ə)	+	-ít̥sə	portít̥sə	‘little gate’
b.	kre̥áng(ə)	+	-ú̥tsə	krengú̥tsə	‘little branch’
	gre̥áts(ə)	+	-ós	gretsós	‘nauseating’

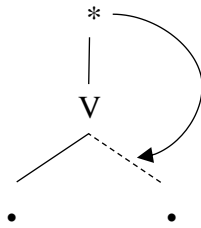
It seems that in Romanian a branching V-structure (shown beneath in full Element Theory) can only be licensed by stress. This is encoded formally in the grammar in the form of a Melody-to-Structure Licensing Constraint (MSLC) (Ulfsbjorninn & Lahrouchi 2016) stated in (19). This is shown (just for expository purposes) with an arrow in the structure.

<sup>11</sup> The root node, a segmental level organisation of Elements that attaches to a C or V is making a resurgence in Strict CV representations (Ulfsbjorninn 2021a, 2021b; Scheer to appear).

<sup>12</sup> They could be referred to as complex or branching V-slot.

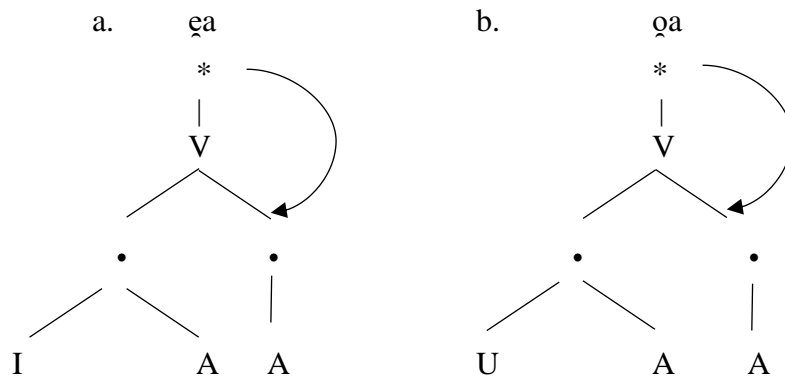
<sup>13</sup> In contrast, morphological factors such as gender category play a larger role in the less regular metaphony processes triggered by plural morphemes (as discussed in Chitoran’s [2002b] seventh chapter).

(19) MSCL - Branching V must be licensed by stress

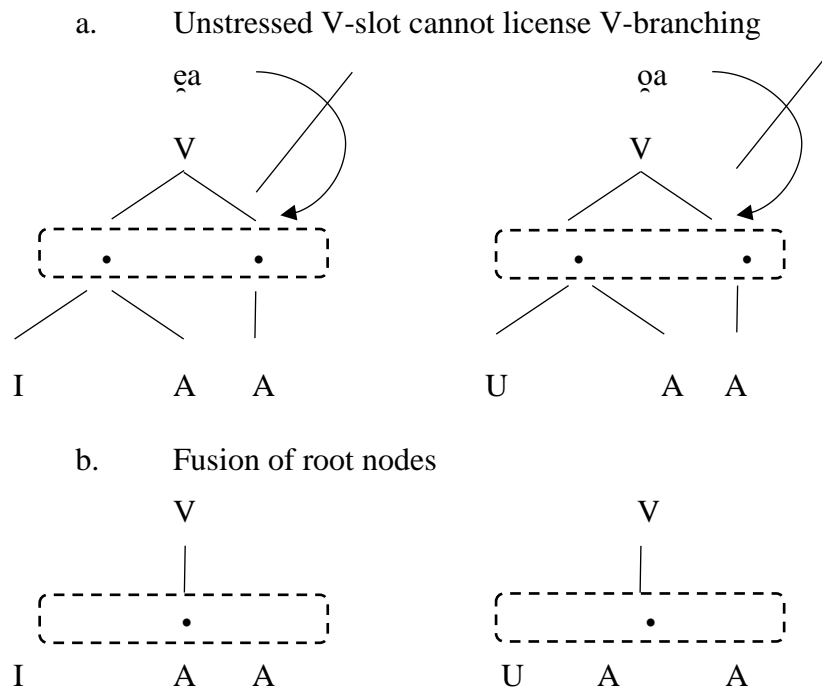


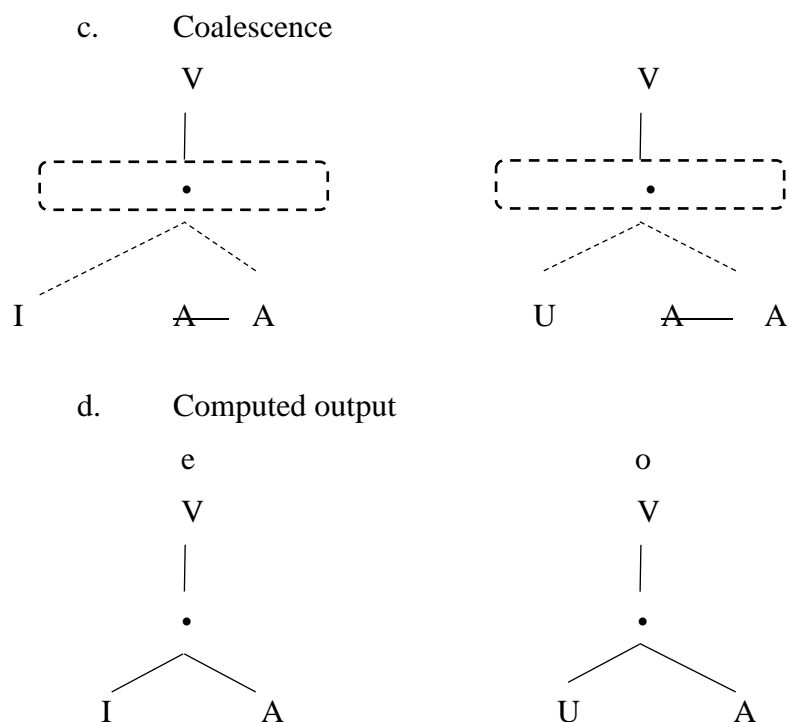
When stress shifts, as can be seen in example (21), the two root nodes of the branching structure must fuse into a single root node. This leads to the coalescence of its featural content: [A.I] = [e] and [A.U] = [o]. A loss of complexity at the structural but not melodic level.

(20) Complex V-slots licensed by stress



(21) Complex V-slots in unlicensed position





### 6.2.2. Stress and Vj sequences

The stress-based behaviour observed in [ɛa] and [ɔa] diphthongs is very different from the situation in Vj sequences. We do not see the same unstressed vowel reduction with unstressed Vj diphthongs: tajfún ‘typhoon’.

We take this to mean that, although all word-final Vj sequences are stressed, the structure clearly does not *require* licensing through stress. Word-final stressed Vj sequences remain essentially unchanged in the context of stress-shifting suffixes.

#### (22) Vj before stress-shifting affixes

a.	V-initial	gunój	+	-er	gunojér	‘garbage man’
b.	C-initial	krój	+	-tor	krojitór	‘tailor’

The key question is why are Vj always stressed domain-finally? An interesting pattern emerges when these are compared to final Vw sequences. In contrast to vowel and [j] combinations, [w] is considerably more restrictive resulting in a paradigm that is filled with gaps. Although we have largely overlooked vowel and [w] combinations so far, the distribution between final Vw and Vj is strikingly parallel. Vw is not permissible word-internally yet is found abundantly in domain-final position: paríw ‘bet’, piríw ‘brook’, birów ‘office’, litfěw ‘high school’. These forms are often morphologically complex, they are roots ending in a stressed vowel followed by the desinence vowel [u] of the Masculine Singular. In this context it is realized as [w].<sup>14</sup>

<sup>14</sup> There are also some non-morphological final Vw sequences: merew ‘frequently’.

Steriade (1984) dubs this phenomenon final high-vowel desyllabification arguing that after all steps of syllabification are completed, all remaining domain-final high vowels are desyllabified: [i] → [j]; [u] → [w].

The outcome of this desyllabification process hinges on the placement of stress in the root, which is determined beforehand. The underlying final sequence /Ciu/ has two possible outcomes. If stress falls elsewhere on the stem, the sequence follows the typical hiatus rules and results in the glide-vowel sequence [ju]: stúdi + u → stúdju ‘studies’. Alternatively, if the [i] is stressed, i-gliding is blocked and high-vowel desyllabification applies turning the domain-final [u] into [w]: pîrí + u > pîríw ‘brook’. Steriade’s analysis allows us to capture the vowel/glide generalization of both final [j] and [w]. The mystery of obligatory stress in final Vj is turned on its head. It is because the vowel is stressed that we obtain a Vj sequence.

Steriade achieves this by treating high vowels as underlyingly underspecified for syllabicity, resulting in either high vowels or glides depending on syllabification. The Strict CV interpretation of the phenomenon proposes that in roots ending in stressed vowels + high vowel, the final high vowel is underlyingly neither linked to C nor V, i.e. are floating elements |I| and |U|. This conclusion is confirmed by the pattern of vowel/glide before either C- or V-initial affixation.

In our framework final Vj sequences end in a floating |I|. This is shown in (26a) as an |I| floating beneath, not attached to, its CV slots. As we have said, the surfacing of |I| will depend on the syllable structure conditions.

In GP generally, and in Strict CV, in a derivation phonological rules apply when their conditions are met. They are not supposed to have access to counterfactuals, other possible forms or look-ahead devices. Consequently, as discussed in Ulfsbjorninn (2021a), if a language has a FEN (such as V3) in final position and the Domain-Final Parameter (DFP) is set to *yes* (as we have said it is in Romanian), then this FEN will be silenced by the DFP even if there is a floating feature beneath it that could have (counterfactually) filled it. For this reason, V3, a FEN with a floating feature beneath it, will be silenced by the DFP. This leaves only C3 in a position to host the floating element |I|, this produces Vj.

(23) a. /guno<i>/ ‘garbage’ (glide/high vowel shown as element |I|)

			*			
			*	*		*
C1	V1	C2	V2	C3	V3	
g	u	n	o		I	

b. Hiatus resolved: gúnoj

			*			
			*	*		*
C1	V1	C2	V2	C3	V3	
g	u	n	o	I	I	

The same occurs with another root with final floating I, /kro<i>/ ‘cut’. As shown in (24a), in isolation the final V-slot (V3) is silenced by the Domain-final parameter. Under these conditions, the |I| can only link to the C-slot (C3) (24b).

Moving now to the same root before a consonant-initial affix, we see that once concatenated with the suffix, (V3) cannot be silenced by the Domain-Final parameter. This is shown in (24c). Consequently, the floating |I| is free to link to its V-slot (V3). This step results in a VV-hiatus, which is standardly resolved in Romanian by linking to the left, producing a glide (Chitoran 2002a: 101-102), the final step is shown in (24d).

(24) Derivation of Vj before C-initial affix

a. UR /kro<i>/

	*		*		*
	*		*		*
C1	<u>V1</u>	C2	V2	C3	V3
k		r	o		I

b. Domain-final position: kroj ‘cut’

		*			
	*		*		*
C1	<u>V1</u>	C2	V2	C3	<u>V3</u>
k		r	o		I

c. /kroI/ + C-initial affix

			*				*		*		*
	*		*		*		*		*		*
C1	<u>V1</u>	C2	V2	C3	V3	+	C4	V4	C5	V5	
k		r	o		I		t	o	r		

d. Computed form [krojitor] ‘tailor’

			*				*		*		*
	*		*		*		*		*		*
C1	<u>V1</u>	C2	V2	C3	V3	C4	V4	C5	V5		
k		r	o		I	t	o	r			

Next, we show a Vj-final root before a vowel-initial suffix. What is special about V-initial affixes is that they trigger an operation called Reduction (Gussmann & Kaye 1993). This is a structure deletion operation eliminates a final empty V-slot (FEN) that precedes a rightward empty C-slot.<sup>15</sup> This operation is commonly required

<sup>15</sup> “An empty Nucleus followed by a pointless Onset are removed from any phonological representation in which they occur” (Gussmann & Kaye 1993: 433).

in Strict CV analyses of morpho-phonological processes (Faust et al. 2018; Breit 2019: 235; Russo & Ulfsbjorninn 2021; Balogné Bérces & Ulfsbjorninn 2021).

As illustrated in (25), Reduction has the effect where a contentful CV sequence is re-established across the juncture, giving the appearance of the fusion of two underlying adjacent “syllables”. This is evident from the indices (which, again, are there just for ease of reference).

(25) Reduction context

C1	V1	C3	V3	+	C4	V4	C5	<u>V5</u>
x	y	z				t	p	

b. Reduction

C1	V1	C3	<del>V3</del>	+	<del>C4</del>	V4	C5	<u>V5</u>
x	y	z				t	p	

c. Outcome

C1	V1	C3	V4	C5	<u>V5</u>
x	y	z	t	p	

This process is the key to the following step of the analysis. The underlying form of the root and affix are shown in (26a). In (26b), we return to the V<sub>j</sub> final stems before vowel-initial affixes. Here we see the application of reduction (V<sub>3</sub>, C<sub>4</sub> are deleted). This leaves only the position (C<sub>3</sub>) for the floating |I| to link to, resulting in the computed form shown in (26c).

(26) V<sub>j</sub> roots before vowel-initial affix

a. Adding underlyingly stressed suffix

										*
			*						*	*
	*		*		*				*	*
C1	V1	C2	V2	C3	V3	+	C4	V4	C5	<u>V5</u>
g	u	n	o		I			e	r	

b. Reduction

										*
			*						*	*
	*		*		*				*	*
C1	V1	C2	V2	C3	<del>V3</del>	+	<del>C4</del>	V4	C5	<u>V5</u>
g	u	n	o	I				e	r	



## c. Stress to the right: gunojér ‘garbage man’

			*			*		*
	*		*				*	*
C1	V1	C2	V2	C3		V3	C4	<u>V4</u>
g	u	n	o	I	e	r		

This derivation assumes that Vj roots contain a floating |I|, and the analysis seems to work though it is tentative. Crucially, however, even if Vj were an ordinary VV diphthong or a VC sequence underlyingly, all of these structures are compatible with our Strict CV Metrics model of Romanian since stress in VC and VV sequences never violate the window.

## 7 Conclusion

What lies at the core of the Romanian stress system is the metrical window – an observation that is frequently found in the existing literature; however, to get the most out of the window one has to build it on a CV skeleton and not standard syllables. Redefining the domain of the window in CV units makes new generalizations possible and illuminates the true extent to which the Romanian nominal stress system must be lexically predetermined, since (outside of examples that can be attributed to cyclicity), the metrical window applies to all forms. Though stress placement is lexically specified, it never falls outside of the 3\* window. This representational account explains the unattested CV.CV.CVC forms that fall within three standard syllables from the right edge. This account also predicts a pattern of stress shift, where a stress visible affix (that does not have its own underlying stress) causes stress shift in only those forms that would otherwise violate the metrical window. Finally, the paper reviews the behaviour of diphthongs particularly related to the question of weight-sensitivity in the Romanian stress system concluding that despite certain tendencies, at this current stage, the system is better analysed without reference to quantity.

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